



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Timothy J. Brennan

Application No.: 10/640,986

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Title: METHOD AND FUEL  
ADDITIVE INCLUDING IRON  
NAPHTHENATE

Attorney Docket No.: EP-7606

Group Art Unit: 1714

Examiner: Cephia D. Toomer

Commissioner of Patent  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Declaration Of Timothy J. Brennan

I, Timothy J. Brennan, declare as follows:

1. I have been employed by Afton Chemical or its predecessor in interest for 15 years. I am a Lab Supervisor for Afton Chemical. I have worked with fuel additives for my entire career with Afton Chemical. I am a named inventor with respect to the presently-claimed invention.
2. I helped to create the fuel additive that is described in the present application and claimed in the claims of the present application. The specific additive was made to meet a particular specification of an engine manufacturer. Iron naphthenate is known to be a generally very viscous material. The more iron naphthenate that is added to a mixture, the worse or

higher the viscosity of the combination. A challenge with respect to the present additive was obtaining the low viscosity (no more than 1.70 mm<sup>2</sup>/S at 40° C) but also the flash point of greater than 55° C. Most solvents that have a high flash point also have higher viscosity. In other words, high flash point solvents are not able to "cut" the viscosity of the iron naphthenate very well.

3. Another challenge with respect to the present additive was to find an additive that had a cloud point of less than -40° C. For instance, the Exxon Mobil chemical additive Aromatic 150 froze at -5° C. Therefore, a mixture of this solvent plus iron naphthenate would freeze before reaching the cloud point of -40° C.

4. Multiple trial runs were made at the time of the development of this fuel additive in order to identify an additive to meet the volatility requirement of less than 1.70 mm<sup>2</sup>/S at 40° C. The following table describes the various solvents used with 23.6 gFe/L of iron naphthenate plus the solvent. As is evident from the following table, only the Shellsol AB solvent was able to meet the viscosity requirement during our testing.

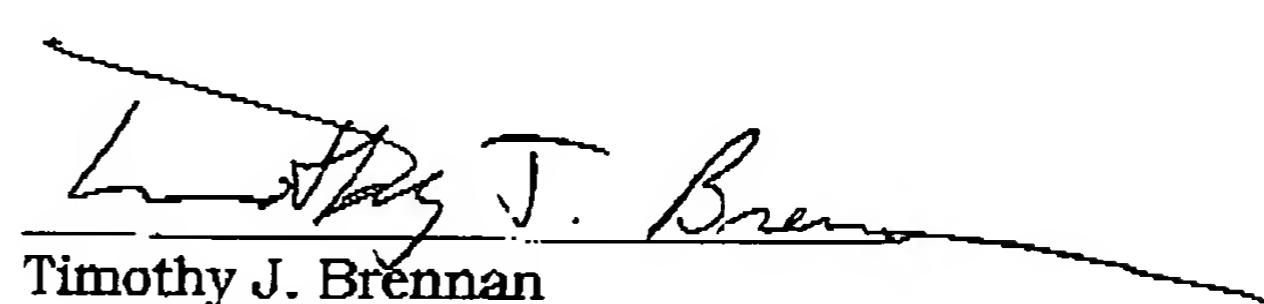
<u>Solvent Used</u>	<u>Viscosity, cSt</u>
Isopar	2.19
80/20 Isopar/Glycol ether EB	2.23
Solvent 142-66	1.75
Exxsol D60	2.09
Rerun of Solv 142 w/ 22.3 gFe/L	1.73
Glycol Ether EB	>2.39
Ether DPM	3.15
Solv. 142-66 + A-100	1.72 * too low on flash

Solv 142 - 66 + Isooctane  
Shellsol AB

1.68 \* too low on flash  
1.32 Rerun 1.35

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 11/16/06

  
Timothy J. Brennan